Amendments to the Specification

These changes are being made for the purpose of correcting typographical errors in the equations. No new matter is being introduced by these changes.

Please replace the paragraph beginning on page 20, line 25 with the following:

This is represented in FIG. 4. The square points in this case stand for values measured with laser pulses of a particular length (for laser radiation from an ArF excimer laser with a wavelength of 193 nm). It can be seen that the ablation depth increases with the logarithm of the effective beam energy density. The ablation depth d therefore obeys the formula

$$\cancel{d = m \cdot \ln\left(\frac{F}{F_{ih}}\right)} \quad \underline{d = m \cdot \ln\left(\frac{F}{F_{th}}\right)} \quad , \qquad (1)$$

where F is the effective beam energy density and F_{th} is an energy-density threshold above which ablation actually starts to take place. The factor m is a constant. The curve 52 was fitted according to this formula. The energy-density threshold F_{th} was found to be 50 mJ/cm^2 in this case.

Please replace the paragraph beginning on page 22, line 17 with the following:

The area A_{eff} of the cornea 54 is therefore greater by a factor k1(r),

$$\cancel{k1(r) = \frac{A_{eff}(r)}{A_n} = \frac{A_{eff}(r)}{\pi \cdot r_s^2}} \quad \underline{k1(r) = \frac{A_{eff}(r)}{A_0} = \frac{A_{eff}(r)}{\pi \cdot r_s^2}} \quad , \qquad (4)$$

than the area A_0 of a laser-beam spot with normal incidence.

Please replace the paragraph beginning on page 5, line 1 with the following:

Thus, with the known logarithmic dependency of the ablation depth on the effective beam energy density, it is possible to set up a correction factor kor1(r), by which the ablation depth achieved with normal incidence of the laser-beam spot needs to be multiplied in order to obtain the ablation depth that is achieved in the case as represented in FIG. 5. The first correction factor is given as

$$\cancel{kor1(r) =} \frac{\ln\left(\frac{F}{kl(r)F_{ih}}\right)}{\ln\left(\frac{F}{F_{ih}}\right)} \quad \underline{kor1(r) = \frac{\ln\left(\frac{F}{k1(r)F_{th}}\right)}{\ln\left(\frac{F}{F_{th}}\right)}} \quad . \qquad (5)$$

Please replace the paragraph beginning on page 24, line 1 with the following:

To identify the reflected fraction of the incident light, use is made of the Fresnel equations, which can be found for example in the Lehrbuch der Experimentalphysik [textbook of experimental physics] by Bergmann, Schaefer, Volume III Optics, Walter de Gruyter, Berlin, New York 1987, page 496:

$$\cancel{q2(\alpha_1) = \frac{\sqrt{n^2 - \sin^2(\alpha_i)} - \cos(\alpha_i)}{1-n^2}} \quad \underline{q_\perp(\alpha_1) = \frac{\sqrt{n^2 - \sin^2(\alpha_i)} - \cos(\alpha_i)}{1-n^2}} \qquad (6)$$

$$\cancel{q2(\alpha_1) = \frac{n^2\cos(\alpha_i) - \sqrt{n^2 - \sin^2(\alpha_i)}}{n^2\cos(\alpha_i) + \sqrt{n^2 - \sin^2(\alpha_i)}}} \quad \underline{q_\parallel(\alpha_1) = \frac{n^2\cos(\alpha_i) - \sqrt{n^2 - \sin^2(\alpha_i)}}{n^2\cos(\alpha_i) + \sqrt{n^2 - \sin^2(\alpha_i)}}} \quad , \qquad (7)$$

where [[q1]] <u>q⊥</u> stands for perpendicularly polarised light and [[q1]] <u>q||</u> stands for parallel-polarised light and n is the refractive index of the corneal material, which is for example n=1.52 for a wavelength of 193 nm (see G. H. Pettit, M. N. Ediger, Corneal-tissue absorption coefficients for 193- and 213-nm ultraviolet radiation, Appl. Optics 1996, volume 35, pages 3386 to 3391). In order to obtain a dependency on the distance r, the following formula is used

$$\alpha_1(r) = a\tan\left(\frac{r}{\sqrt{R^2 - r}}\right) \text{, where: } 0 \le r^2 < R[sic]. \qquad (8)$$

Please replace the paragraph beginning on page 24, line 22 with the following:

For unpolarised light, the reflectance k2(r) at the interface between air and tissue is given as:

$$\cancel{k2(r) = \frac{q_i^1(r) + q_{ii}^2(r)}{2}} \quad \underline{k2(r) = \frac{q_\perp^2(r) + q_\parallel^2(r)}{2}}.$$

Please replace the paragraph beginning on page 25, line 1 with the following:

If only the fact that a part of the incident radiation is reflected away were to be taken into account, and the aforementioned reduction in the energy density due to the increase in the effective area A_{eff} in relation to the original area A_0 were to be omitted, then an effective beam energy density of (1-k2(r))·F would be obtained in relation to the incident beam energy density F, and hence an attenuation of the ablation depth d to kor2(r)·d, where

$$\cancel{kor2(r) =} \frac{\ln\left(\frac{(1-k2(r))\cdot F}{F_{ih}}\right)}{\ln\left(\frac{F}{F_{ih}}\right)} \quad \underline{kor2(r) = \frac{\ln\left(\frac{(1-k2(r))\cdot F}{F_{th}}\right)}{\ln\left(\frac{F}{F_{th}}\right)}}. \qquad (9)$$

Please replace the paragraph beginning on page 26, line 3 with the following:

A combined correction factor kor(r) for the ablation depth is hence given as:

$$\cancel{kor(r) = \frac{\ln\left(\frac{(1-k2(r))\cdot F}{kl(r)\cdot F_{ih}}\right)}{\ln\left(\frac{F}{F_{ih}}\right)}} \quad \underline{kor(r) = \frac{\ln\left(\frac{(1-k2(r))\cdot F}{k1(r)\cdot F_{th}}\right)}{\ln\left(\frac{F}{F_{th}}\right)}} \quad . \qquad (10)$$